

### **REMARKS**

Claims 1, 3, 4, 6-10, 12, 13 and 15-19 remain pending in the present application. Claims 2, 5, 11 and 14 have been cancelled. Claims 1, 3, 4, 6-10, 12, 13 and 15-19 have been amended. Basis for the amendments can be found throughout the specification, claims and drawings as originally filed.

### **REJECTION UNDER 35 U.S.C. § 101**

Claims 1-19 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Applicants respectfully traverse this rejection.

Claims 1, 10 and 19 have been amended to define a design-aiding device for designing a casting product and to define that the computing means computes with an equation where a temperature gradient of the melted material is divided by a square root of a cooling rate of the melted material. Also, the quantifying means quantifies the region shrinkage porosity occurrence rate as a region specific gravity value by dividing the sum by a volume of the region. Outputting means outputs the region specific gravity value. By indicating the shrinkage porosity occurrence rate as the region specific gravity value the designer is able to easily determine if the casting product is good or bad as is described on page 9, line 13 to page 10, line 1.

Thus, Applicants believe Claims 1, 10 and 19, as amended, do produce a "useful, concrete and tangible result" (the region specific gravity value) and these claims now define statutory subject matter. Reconsideration of the rejection is respectfully requested.

## **REJECTION UNDER 35 U.S.C. § 102**

Claims 1-19 are rejected under 35 U.S.C. § 102(b) as being clearly anticipated by Ebisu, et al. "Method and Apparatus for Continuous Casting" (U.S. Pat. No. 6,241,004) hereinafter referred to as Ebisu. Applicants respectfully traverse this rejection.

Ebisu discloses a technology relating to continuous-casting with metal as the raw material. This is entirely different than the purpose of the present invention which is a device to aid in the design of a casting product.

Ebisu uses an equation based on a relationship between a casting pressure and a permeability as illustrated in Figure 10A and "A-4 Method of the Numerical Analysis" column 20, line 63 to column 22, line 30. Ebisu does not disclose, teach or suggest an equation where a temperature gradient of the melted material is divided by a square root of a cooling rate of the melted material that is now defined in independent Claims 1, 10 and 19. Applicants have reviewed the various portions of the Ebisu reference indicated by the Examiner in relation to Claim 2 on pages 4 and 5, and Applicants are unable to locate any reference to a temperature gradient of the melted material being divided by a square root of the cool rate of the melted material.

Thus, Applicants believe Claims 1, 10 and 19, as amended, patentably distinguish over the art of record. Likewise, Claims 3, 4 and 6-9, which ultimately depend from Claim 1, and Claims 12, 13 and 15-18, which ultimately depend from Claim 10, are also patentably distinguishable over the art of record. Reconsideration of the rejection is respectfully requested.

## CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: November 20, 2006

By: 

Michael J. Schmidt, 34,007

HARNESS, DICKEY & PIERCE, P.L.C.  
P.O. Box 828  
Bloomfield Hills, Michigan 48303  
(248) 641-1600

MJS/pmg